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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/887,481 | 06/22/2001 | Harri Posti | 930.332USW1 | 7569 |

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EXAMINER

PHU, PHUONG M

| ART UNIT | PAPER NUMBER |
|----------|--------------|
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2631

DATE MAILED: 04/30/2003

7

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary

Application No.

09/887,481

Applicant(s)

POSTI, HARRI

Examiner

Phuong Phu

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 June 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 23-44 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 23-44 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 June 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 1,5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to because:

- Figures 1-3 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g).

- In figures 1 and 3, functional elements or blocks in the figures must be labeled with its corresponding functional names; e.g., in figure 1, element 6 is suggested to be labeled with "Base Station", element "8" with "Mobile Station", and in figure 4, block "14" with "Modulator" and so on.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

2. The Specification must be divided in to separated sub-sections and titled correspondingly; e.g., into sub-sections of Field of the Invention, Background of the Invention, Summary of Invention, Brief Descriptions of the Drawing and Detail Description of the Invention.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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4. Claims 23-44 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

It is unclear whether "said different signals" (line 3, claim 1), "said plurality of digital signals" (line 8, claim 1), "said input signal" (line 12, claim 1), "said signals" (line 2, claim 27), "the plurality of signals" (line 2, claim 28) refer "a plurality of different digital signals" (line 2, claim 23).

Similarly, it is unclear whether "said different signals" (lines 3-4, claim 44) refers "a plurality of different digital signals" (line 3, line 44).

Claims (if any) depended on the claims mentioned above are also rejected.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the

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reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

6. Claims 23-25, 28-31, 33, 37-40 and 42-44 are rejected under 35 U.S.C. 102(b) as being anticipated by Carney et al (5,937,011).

As per claims 23 and 44, see figure 1 and col. 2, line 20 to col. 4, line 17, Carney et al discloses a method and associated system comprising:

input step/means (inherently included) for receiving a plurality of different digital signals (121-1,..., 121-n);

modulator step/means (120) for modulating said different signals at respective carrier frequencies;

combiner step/means (122) for combining said plurality of different signals to provide a composite signal (15)

amplifier step/means (including (18)) for receiving said composite signal (15);

predistortion step/means (14) for predistorting said plurality of digital signals wherein the predistortion performed by step/means (14) is dependent on the difference between said input signals in a signal (125) and the output of said amplifier step/means.

As per claim 24, Carney et al discloses that said input step/means separately receives each of said different signals (see figure 1).

As per claim 25, Carney et al discloses a combiner means (122) to provide a composite signal (see figure 1).

As per claim 28, Carney et al discloses that said predistortion step/means predistorts the composite signal (see figure 1).

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As per claim 29, Carney et al discloses a feedback path (165, 166) (see figure 1).

As per claims 30 and 33, Carney et al discloses that the distortion step/means compares the output from the amplifier step/means for the feedback path with the signals received by the receiving step/means and provides predistortion values applied to a subsequent signal received by the receiving step/means (see figures 1 and 2A, and col. 4, lines 18-52).

As per claim 31, Carney et al discloses means (123, 165) for separating the output of the amplifier step/means into a signal (150) comprising a plurality of said different signals.

As per claim 37, Carney et al discloses that the amplifier step/means comprises an amplifier (18).

As per claim 38, Carney et al discloses that said predistortion step/means compensates for the nonlinearity of amplitude of the amplifier (see col. 4, line 49-52).

As per claim 39, Carney et al discloses a D/A converter step/means (160) for converting said plurality of signals prior to said amplifier step/means (see figure 1).

As per claim 40, Carney et al discloses an A/D converter step/means (166) as claimed (see figure 1).

As per claims 42 and 43, Carney et al discloses a station comprising the method and associated system (see col. 2, line 20-35).

7. Claims 23-27 and 29-44 are rejected under 35 U.S.C. 102(e) as being anticipated by Helms (2001/0014592).

As per claims 23 and 44, see figure 4 and page 2, section [0028] to page 3, section [0035], Helms discloses a method and associated system comprising:

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input receiving and modulating step/means (inherently included) for receiving a plurality of different digital signals and modulating said different digital signals at respective carrier frequencies to produce a plurality of different signals (in_1, \dots, in_n);

combiner step/means (SUM) for combining said plurality of different signals to provide a composite signal (in_{pr}).

amplifier step/means (UM, PA) for receiving said composite signal;

predistortion step/means (PDD) for predistorting said plurality of different signals wherein the predistortion performed by step/means (PDD) is dependent on the difference between said input signals (in_1, \dots, in_2) and the output (out_m) of said amplifier step/means.

As per claim 24, in Helms, said receiving and modulating input step/means inherently separately receives each of said different digital signals (see figure 4).

As per claim 25, Helms discloses a combiner means (SUM) to provide a composite signal (see figure 4).

As per claim 26, Helms discloses said distortion step/means, using means (PD_1, \dots, PD_n), predistorts individually said each of said plurality of different signals (see figure 4).

As per claim 27, Helms discloses said distortion step/means predistorts said plurality of different signals before being combined in said combiner step/means (see figure 4).

As per claim 29, Helms discloses a feedback path (DDC, ADC, DM) (see figure 4).

As per claims 30 and 33, Helms discloses that the distortion step/means compares the output from the amplifier step/means for the feedback path with the signals received by the receiving step/means and provides predistortion values applied to a subsequent signal received by the receiving step/means (see figure 4 and page 2, section [0029] to page 3, section [0033]).

As per claim 31, Helms discloses means (AK) for separating the output of the amplifier step/means into a signal (outm) comprising a plurality of said different signals (see figure 4).

As per claim 32, Helms discloses that said predistortion step/means compares each of said separated signals with the corresponding signal received from said input receiving and modulating step/means to determine predistortion values to be altered (see figure 4 and page 2, section [0029] to page 3, section [0033]).

As per claim 34, Helms discloses that said predistortion step/means provides a plurality of predistortion values stored in means (LUT), each provided for the respective carrier frequency (see figure 4).

As per claim 35, Helms discloses that each of said predistortion values corresponding to a respective carrier frequency takes into account characteristics of other carrier frequencies (see page 1, section [0009]).

As per claim 36, Helms discloses that said characteristics comprise frequency and distortion (see page 1, section [0009]).

As per claim 37, Helms discloses that the amplifier step/means comprises an amplifier (PA).

As per claim 38, Helms discloses that said predistortion step/means compensates for the nonlinearity of amplitude of the amplifier (see page 1, section [0009]).

As per claim 39, Helms discloses a D/A converter step/means (DAC) for converting said plurality of signals prior to said amplifier step/means (see figure 4).

As per claims 40 and 41, Helms discloses an A/D converter step/means (ADC) as claimed (see figure 4).

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As per claims 42 and 43, Helms discloses a station comprising the method and associated system (see pages 2, section [0024]).

Conclusion

8. The applicant is notified hereby that the reference "Internal Search Report for PCT/EP98/08445" cited in the IDS filed on 6/22/01 is not considered as a prior art.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phuong Phu whose telephone number is 703-308-0158. The examiner can normally be reached on M-F (8:30-6:00) First Monday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chi Pham can be reached on 703-305-4378. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9314 for regular communications and 703-872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4700.

Phuong Phu

Phuong Phu
April 11, 2003

Phuong Phu
Primary Examiner
Art Unit 2631